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Effectiveness of Dribbling Exercise Variations on Improving the Dribbling Ability of Basketball Players

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ABSTRACT

Background: The purpose of this study was to analyze the effectiveness of various dribbling exercises in improving the dribbling ability of basketball players.

Methods: This study used a one group pretest-post-test design. The population in this study were athletes registered at the Mustangs Academy basketball club Palembang City, totalling 30 male athletes aged 12-17 years. The test instrument used is a sports skills test in the form of a basketball dribble skill test, using the zig-zag dribble test adopted from the Johnson Basketball Test with a validity value of 0.79 and a reliability value of 0.80. The analysis was conducted using a paired sample t-test statistical test which was preceded by a normality and homogeneity test.

Results: The results of this study indicate that variations in dribbling training had a significant effect on improving the dribbling ability of basketball players. Based on data analysis using the paired sample t-test at a significance level of 5% ($\alpha = 0.05$), the p value is 0.023 ($p < 0.05$).

Conclusions: Variations in dribbling exercises play a crucial role in enhancing basketball players' dribbling abilities. Implementing a mix of foundational drills, game-based scenarios, and specialized exercises like two-ball dribbling or blindfolded practices can lead to significant improvements in control, agility, and overall performance on the court. Regular practice combined with structured training programs is essential for developing effective dribbling skills that translate into better gameplay outcomes.

Keywords: basketball; dribbling; novice athletes

1. Background

Dribbling ability is one of the basic skills that every basketball player must master, especially novice athletes. Dribbling allows players to carry the ball, avoid opponent pressure, and open up opportunities to score (Viscione et al., 2019). However, for novice athletes, dribbling is often a challenge due to a lack of coordination, ball control and understanding of the game situation. Therefore, effective training is needed to help novice athletes master this skill (Wissel, 2012). Effective training methods for improving basketball dribbling ability encompass a variety of approaches, each targeting different aspects of skill development. The modification of 3-on-3 games has been shown to significantly enhance dribbling skills among players, with a marked improvement from 56% to 84% in task completion rates over two cycles of training (Lau et al., 2023).

Additionally, foundational training that emphasizes basic dribbling techniques through discussions and practical group exercises has proven beneficial, fostering better understanding and execution of dribbling movements (Ahmad & Sullisty, 2024). Furthermore, technology-enhanced training, such as computer-assisted drills, has demonstrated substantial improvements in dribbling proficiency, highlighting the effectiveness of integrating modern tools into practice (Shah et al., 2023). Collectively, these methods suggest that a combination of game-based, fundamental, and technological training can optimize dribbling skills in basketball players. Dribbling variation training has become one of the commonly used approaches in learning basic basketball skills (Kong et al., 2015; Liu & Hodgins, 2018). This method involves using a variety of training patterns, such as changes in

speed, direction, and movement combinations, to improve players' motor skills and adaptability. Research shows that varied training methods can improve motor learning ability, strengthen basic mastery, as well as help players transfer skills to real situations in matches (Schmidt & Lee, 2014). However, the effectiveness of dribbling training variations in novice athletes is often influenced by factors such as experience level, age, and the training design applied.

For example, (Mukherjee & Yentes, 2018) found that training programs designed with gradual levels of difficulty can help improve confidence and ball control ability in novice players. Meanwhile, other studies emphasize the importance of providing a training environment that supports skill exploration without excessive pressure (Chow & Atencio, 2014). In this context, research on improving dribbling ability becomes relevant to answer the needs of coaches and players. This study aims to evaluate how effective various dribbling exercise variations are in improving the dribbling ability of beginner athletes. The results of the study are expected to provide evidence-based guidance for coaches in designing appropriate training programs to support player development at an early stage.

2. Method

This study used a one group pretest-post-test design. The research subjects took a pretest to measure initial dribble skills, followed by a training program that focused on dribble variations, and ended with a post-test to measure skill improvement. By using total sampling, the research sample in this study were athletes registered at the Mustangs Academy basketball club Palembang City, totalling 30 male athletes aged 12-17 years. From the demography of the research subjects, it can be said that the research subjects are said to be novice athletes. As for the research instrument in the form of a Basketball dribbling test. The test implementation consists of an initial test and a final test. The initial test is carried out before being given treatment, before conducting the test the researcher must check for health, as well as injuries that have been experienced. The test instrument used is a sports skills test in the form of a basketball dribble skill test, using the zig-zag dribble test adopted from the Johnson Basketball Test with a validity value of 0.79 and a reliability value of 0.80 (Lacy & Williams, 2018).

The training program lasted for 6 weeks with a frequency of 3 times per week (Bompa et al., 2019). Each training session lasted 90 minutes and consisted of warm-up (10 minutes) in the form of dynamic stretching and basic dribble training. Followed by Core training (70 minutes) in the form of (1) static dribbles consisting of ball control exercises in place, including hand changes (crossovers) and low-high dribble combinations; (2) dynamic dribbles involving forward, backward, and lateral movements with various variations, such as between the legs, behind the back, and spin dribbles; and (3) situational dribbles in the form of simulating game situations with quick decision making, such as passing obstacles or facing opponents. And ended with cooling (10 minutes) in the form of static stretching to reduce muscle tension. This study used a pretest-post test one group design to evaluate the effectiveness of the intervention provided. In this design, data pretest and post-test the implementation of the intervention on the same group, without using a control group. The data obtained from the pretest and post-test results were analysed to measure changes in scores due to the intervention. The analysis was conducted using a paired sample t-test statistical test which was preceded by a normality and homogeneity test.

3. Result

This study aims to evaluate the effectiveness of the dribble variation training method on basketball dribble skills.

Table 1. Mean and Standard Deviation of Pretest and Posttest Scores

Variable	N	Pretest Mean ± SD	Posttest Mean ± SD	Gain
Dribble	30	50,23 ± 4,56	75,56 ± 3,89	25.33

Normality Test

The normality test was conducted to determine whether the pretest and posttest data were normally distributed. The normality test uses Shapiro-Wilk with the following results:

Table 2. Data Normality Test Results

Variable	N	p-value Pretest	p-value Posttest	Description
Dribble Skills	30	0,123	0,089	Normal

Based on table 2, the data is normally distributed because the $p\text{-value} > 0.05$.

Homogeneity Test

Homogeneity test was conducted using Levene's Test to determine the similarity of variance between experimental and control groups.

Table 3. Results of Homogeneity Test Data

Variable	N	p-value	Description
Dribble Skills	30	0.241	Homogen

Based on table 3, it can be concluded that the variance between groups is homogeneous because the $p\text{-value} > 0.05$.

Analysis of Pretest and Posttest Data

Data were analyzed using an paired sample t-test to compare posttest results between experimental and control groups.

Table 4. Pretest and Posttest Results

Variable	N	Pretest Mean ± SD	Posttest Mean ± SD	Gain	p-value	Description
Dribble Skills	30	50,23 ± 4,56	75,56 ± 3,89	25.33	0.001	Significant

Based on table 4, the intervention showed a significant increase in skills that was greater than than posttest data. This indicates that the method used was effective in improving skills.

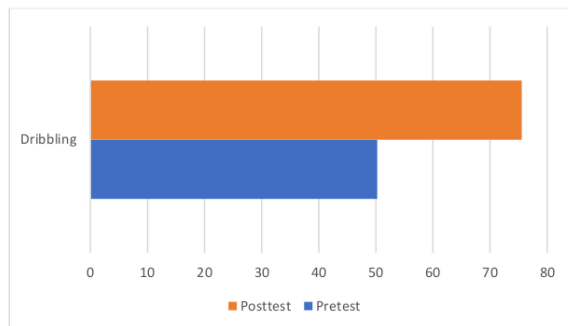


Figure 1. Pretest and Posttest Graph

The graph above shows a comparison of pretest and posttest results in the experimental and control groups. The experimental group showed a much more significant improvement than the control group, as seen from the higher difference in the average posttest score.

4. Discussion

Discussion Research indicates that game-based approaches significantly improve dribbling skills. A study involving extracurricular basketball students showed that implementing a game approach led to measurable improvements in dribbling ability, as evidenced by pre-test and post-test comparisons ($p < 0.05$) (Saputra et al., 2023). This suggests that engaging players in game-like conditions can enhance their learning and retention of dribbling techniques. Another study focused on the impact of structured ball handling exercises on dribbling skills. (Arifianto & Fardi, 2021) Results indicated a significant increase in dribbling proficiency following a regimen of dedicated ball handling training sessions ($t_{hit} = 11.21 > t_{tab} = 2.26$). This underscores the importance of consistent practice using targeted drills tailored to improve specific aspects of dribbling.

Research indicates that various training methods can effectively improve basketball players' dribbling abilities. Ball handling exercises have been shown to significantly enhance dribbling skills (Arifianto & Fardi, 2021; Budiyanto et al., 2023). Plyometric exercises also contribute to improved dribbling performance, with one study reporting a 13.46% improvement in dribbling skills after a 12-week program (Shallaby, 2010). The choice of training method can impact outcomes, with structured training methods generally yielding better results than play-based methods for athletes with high achievement motivation (Widiawati, 2020). However, for athletes with low achievement motivation, play-based methods may be more effective (Widiawati, 2020). These findings suggest that coaches should consider both the type of exercise and individual athlete characteristics when designing dribbling training programs. Incorporating a variety of exercises, including ball handling and plyometrics, may lead to optimal improvements in basketball players' dribbling abilities.

Skill-level tailored ball handling exercises play a crucial role in the development of dribbling techniques by providing athletes with targeted training that aligns with their current abilities. These exercises enhance fundamental skills such as ball control, precision, and rhythm, which are essential for effective dribbling in sports like basketball and soccer (Budiyanto et al., 2023). Research indicates that structured training programs, which incorporate specific drills based on the athlete's skill level, lead to significant improvements in dribbling performance (Budiyanto et al., 2023; Syah et al., 2019). For instance, studies have shown that both boomerang

run and ladder drills effectively enhance dribbling skills, with ladder drills demonstrating slightly superior results (Ramadhani & Kriswanto, 2023). Furthermore, the continuous evaluation and adaptation of training methods ensure that athletes remain engaged and can innovate their techniques, ultimately fostering a more comprehensive skill set in ball handling.

The effectiveness of various dribbling exercise variations on improving basketball players' dribbling ability is well-supported by recent studies. Footwork and handwork drills significantly enhanced dribbling skills among female college students, with footwork drills proving more effective than handwork drills (Banawan & Barcelona, 2023). Additionally, a 12-week basketball-specific training program led to notable improvements in dribbling scores among amateur players, indicating that structured training can yield substantial skill enhancements (Borkar & Badwe, 2023). Furthermore, the incorporation of reactive agility exercises using the FITLIGHT system resulted in a 19% improvement in dribbling skills, highlighting the benefits of integrating technology into training (Hassan et al., 2022). Lastly, modifying 3-on-3 games effectively increased dribbling proficiency among middle school students, demonstrating that game-based approaches can also be beneficial (Lau et al., 2023). Collectively, these findings underscore the importance of varied and structured training methods in developing dribbling abilities in basketball players. This study has several limitations that should be acknowledged. First, the research was conducted using a single group without a control group, which limits the ability to compare the effectiveness of the intervention against other methods or natural progressions. Second, the sample size was relatively small, which may restrict the generalizability of the findings to broader populations. Third, the study duration was short, which may not capture long-term improvements or retention of dribbling skills. Lastly, the research focused solely on dribbling performance and did not consider other basketball skills or psychological factors that might influence performance. agian ini harus membahas implikasi temuan dalam konteks penelitian yang ada dan menyoroti keterbatasan penelitian.

5. Conclusions

Variations in dribbling exercises play a crucial role in enhancing basketball players' dribbling abilities. Implementing a mix of foundational drills, game-based scenarios, and specialized exercises like two-ball dribbling or blindfolded practices can lead to significant improvements in control, agility, and overall performance on the court. Regular practice combined with structured training programs is essential for developing effective dribbling skills that translate into better gameplay outcomes.

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